

REMARKS

The applicant respectfully requests reconsideration in view of the amendment and the following remarks. The applicant appreciates the Examiner pointing out the errors in claim 7. The applicant has amended claim 7 and believes that claim 7 as amended over comes the 35 U.S.C. 112, second paragraph rejection.

Claim 7 is rejected under 35 USC 112, second paragraph rejection. Claims 1 and 27 are rejected as being unpatentable over Miyawaki (JP 06240105) in view of Linder (US 4683267). Claims 1 and 27 are rejected as being unpatentable over Miyawaki and Linder in view of Yabuta (US 5889115). Claims 1 and 27 are rejected as being unpatentable over Miyawaki and Linder in view of Bederke (US 5426156). Claims 1, 2, 7, 11, and 18-20 are rejected as being unpatentable over Natarajan (US 4480071) in view of Linder (US 4683267). Claims 1, 2, 7, 11, 15, 16, and 21-23 are rejected as being unpatentable over Natarajan and Linder in view of Yabuta. Claims 1, 2, 7, 11, 15, 17, and 24-26 are rejected as being unpatentable over Natarajan and Linder in view of Bederke. Claims 9 and 10 are rejected as being unpatentable over Natarajan and Linder in view of Bederke of Yabuta in further view of Sharma (US 6090319). Claims 1, 2, 3, 7, 9, 10, 11, 15, 16 and 17 were rejected under the judicially created Doctrine of Obviousness-type double patenting over Claims 1, 4, 9, 10-12, 16-24 of co-pending Application Serial No. 10/506,541 now issued Patent No. 7,169,887 ("the '887 patent") in view of Laughner. The applicant respectfully traverses these rejections.

35 U.S.C 112, Second Paragraph Rejection

Claim 7 is rejected under 35 USC 112, second paragraph rejection. The applicant appreciates the Examiner pointing out the errors in claim 7. The applicant has amended claim 7 and believes that claim 7 as amended over comes the 35 USC 112, second paragraph rejection. For the above reasons this rejection should be withdrawn.

Rejection Over Miyawaki Under 35 U.S.C. § 103

Claims 1 and 27 were rejected under 35 U.S.C. § 103 as being unpatentable over Miyawaki in view of Linder. Claims 1 and 27 are rejected as being unpatentable over Miyawaki and Linder in view of Yabuta. Claims 1 and 27 are rejected as being unpatentable over Miyawaki and Linder in view of Bederke.

The Examiner stated at the bottom of page 2 of the Office Action, “Miyawaki does not disclose the use of the catalysts in Claim 1.” This is not the only difference. The applicant’s claimed invention (see independent claim 1), requires that the catalyst is present in an amount from 0.0007 to 0.005% by weight, based on the total weight of the molding composition. Miyawaki teaches away from this feature. Miyawaki states at the end of paragraph no. 0006:

The loading of a component are (A) **0.01-5 weight** section is suitable to the component 100 weight section. When **there are too few amounts of catalysts, a reaction cannot fully progress and effectiveness of this invention cannot be acquired.** (emphasis added)

Clearly the primary reference, Miyawaki teaches that you need a minimum 0.01 weight percent of the catalyst which is double the maximum claimed by the applicant’s claim 1. Linder, Yabuta nor Bederke could not be used to modify Mikawaki, especially because teaches using a very high amount of catalyst. Therefore, Miyawaki clearly teaches away from the applicant’s claimed invention and these rejections should be withdrawn.

Rejections over Natarajan in view of the Linder, Yabuta or Bederke

Claims 1, 2, 7, 11, and 18-20 are rejected as being unpatentable over Natarajan in view of Linder. Claims 1, 2, 7, 11, 15, 16, and 21-23 are rejected as being unpatentable over Natarajan and Linder in view of Yabuta. Claims 1, 2, 7, 11, 15, 17, and 24-26 are rejected as being unpatentable over Natarajan and Linder in view of Bederke. Claims 9 and 10 are rejected as being unpatentable over Natarajan and Linder in view of Bederke of Yabuta in further view of Sharma.

The primary reference in all these rejection is Natarajan. As the Examiner correctly recognized Natarajan does not teach the applicant's claimed catalyst (see the top of page 5 of the Office Action). In fact, Natarajan discloses at col. 7, lines 46 to col. 8, line 29,

The isocyanate catalyst which is employed may comprise any of the known catalysts which serve to facilitate (1) the unblocking of the blocked isocyanate (if employed) and/or (2) the coupling reaction between the oxymethylene polymer and the filler at the melt processing conditions employed. Specifically, the catalyst will catalyze the unblocking of the blocked isocyanate (if employed) to permit it to react and bridge the terminal reactive hydroxyl groups in the polymer and the reactive groups in the filler. Such catalysts include but are not limited to the

- 1) organic salts of alkali metals,
- 2) lead,
- 3) iron,
- 4) tin,
- 5) cobalt,
- 6) vanadium,
- 7) titanium;
- 8) trialkylenediamines;
- 9) N-alkylethyleneimines; and the like, the following being typical:
- 10) sodium o-phenylphenate;
- 11) sodium trichlorophenate;
- 12) sodium tetramethoxyborate;
- 13) sodium tetrachlorophenate;
- 14) sodium methylcarbonate;
- 15) sodium pentachlorophenate;
- 16) lead linoresinate;
- 17) lead naphthenate;
- 18) lead oleate;

- 19) lead 2-ethylhexonate;
- 20) lead resinate;
- 21) ferric 2-ethylhexoate;
- 22) ferric chloride;
- 23) ferric acetylacetonate;
- 24) dibutyltin sulfide;
- 25) dibutyltin acetylacetonate;
- 26) dibutyltin dibutoxide;
- 27) dibutyltin maleate;
- 28) dibutyltin di-o-phenylphenate;
- 29) dibutyltin dilaurate;
- 30) dibutyltin diacetate;
- 31) dibutyltin di-2-ethylhexoate;
- 32) stannous oleate;
- 33) stannous 2-ethylhexoate;
- 34) stannous chloride;
- 35) butyltin trichloride;
- 36) tributyltin oxide;
- 37) tributyltin o-phenylphenate;
- 38) tributyltin cyanate;
- 39) cobalt 2-ethylhexoate;
- 40) cobalt naphthenate;
- 41) cobalt linoresinate;
- 42) cobalt benzoate;
- 43) cobalt acetylacetonate;
- 44) vanadium acetylacetonate;
- 45) vanadyl acetylacetonate;
- 46) tetraisopropyl titanate;
- 47) dibutyltitanium dichloride;
- 48) methoxytitanium trichloride;
- 49) butoxytitanium trichloride;
- 50) tetrabutyl titanate;
- 51) tetra-2-ethylhexyl titanate;
- 52) titanium acetylacetonate;
- 53) triethylenediamine; n-ethylenimine;
- 54) tetramethylguanidine;
- 55) 1-methyl-4-(dimethylaminoethyl) piperazine;
- 56) N,N,N',N'-tetramethyl-1,3-butylenediamine;
- 57) N-ethylmorpholine; triethylamine;
- 58) copper acetylacetonate;
- 59) copper naphthenate;
- 60) manganous acetylacetonate;
- 61) manganous linoresinate;
- 62) manganous 2-ethylhexoate;
- 63) cadmium nitrate;
- 64) cadmium laurate;
- 65) cadmium alkyl aryl phosphite complex;

- 66) zinc acetylacetonate;
- 67) zinc naphthenate;
- 68) thorium acetylacetonate;
- 69) thorium nitrate;
- 70) nickel acetylacetonate;
- 71) nickelocene;
- 72) chromium acetylacetonate;
- 73) uranyl nitrate;
- 74) dimethylsilicon-di-2-ethylhexoate;
- 75) magnesium acetylacetone;
- 76) aluminum acetylacetonate;
- 77) zirconium acetylacetonate;
- 78) beryllium acetylacetonate;
- 79) tributylphosphine;
- 80) diphenylmercury;
- 81) n-alkyl dimethyl benzyl ammonium saccharinates wherein said alkyl is C.sub.12 -C.sub.18 and mixtures thereof and the like. Further reference may be made to Industrial and Engineering Chemistry, Product Research and Development, Vol. 1, No. 4, December 1962, pages 261-264 for a further discussion of isocyanate-active catalysts¹.

Natarajan discloses 81 different catalysts. In the list of 81 different catalysts the applicant does not believe that Natarajan teaches the applicant's claimed catalyst. The Examiner has asserted that one catalyst in the group is equivalent to other catalysts taught by the secondary references. The applicant respectfully disagrees with this combination. The applicant do not believe that the prior art references are combinable. Natarajan teaches away from the applicant's claimed invention and one of ordinary skill in the art would not combine the secondary references in view of the fact that the primary reference, Natarajan does not teach the applicant's claimed catalyst and in fact teaches away from the applicant's claimed catalyst in this list of 81 different catalysts. For at least the above reasons these rejections should be withdrawn.

Dependent Claims 18-26

¹ The numbers were inserted by the undersigned.

Natarajan teaches away from dependent claims 18-26. Natarajan discloses at col. col. 8, lines 30-36,

The catalyst may be employed in varying amounts ranging from about 0.15 to 2.5 percent by weight, based on the weight of the isocyanate compound. Preferably, the catalyst is employed in an amount ranging from about 0.2 to 2.0 percent by weight, based on the weight of the isocyanate compound. (emphasis added)

The minimum amount of the catalyst is about 0.15% and preferably about 0.2% by weight. However, the maximum amount of catalyst claimed is 0.03 % for claims 18, 21 and 24. Clearly Natarajan teaches away from this low amount of catalyst. However, the maximum amount of catalyst claimed is 0.01 % for claims 19, 22 and 25. This is over a factor of ten less than the minimum amount of catalyst taught by Natarajan. Clearly Natarajan teaches away from this low amount of catalyst. However, the maximum amount of catalyst claimed is 0.005 % for claims 20, 23 and 26. This is over a factor of twenty less than the minimum amount of catalyst taught by Natarajan. Clearly Natarajan teaches away from this low amount of catalyst.

DOUBLE-PATENTING REJECTION

Claims 1, 2, 3, 7, 9, 10, 11, 15, 16 and 17 were rejected under the judicially created Doctrine of Obviousness-type double patenting over Claims of the '887 patent in view of Laughner.

Obviousness-type double patenting as defined is when claims in a patent application are not patentably distinguishable from claims in a patent (MPEP 804). The test applied to determine obviousness-type double patenting exists is whether or not the claims in the application define merely an obvious variation of the invention disclosed and claimed in the patent (In re Vogel and Vogel, 164 USPQ 619 (CCPA 1970). If claims are unobvious over 35

U.S.C. §103, there can be no double patenting (In re White and Langer, 160 USPQ 417 (CCPA 1969)). The Examiner refers that these claims overlap or at least encompass each other. Further, the overlapping of claims is not a significant or controlling factor in obviousness-type double patenting (In re Longi et al., 225 USPQ 645 (CAFC 1985)). The proper consideration of obviousness type doubling patenting is the improper extension of the patent right. The applicants believe that these applications are patentably distinct for the reasons stated below.

Claims 1 and 5 of the '887 patent state,

A **thermoplastic molding** composition comprising
a) **from 20 to 99% by weight of a thermoplastic polymer selected from the group consisting of polyolefin, modified polyolefin; polyacrylate, polymethacrylate, polymers produced via polymerization of esters and/or amides of acrylic or methacrylic acid, and also their copolymers, polyamide, polyester, polycarbonate, polyether, polythioether, polyphenylene oxide, polyarylene sulfides, and their mixtures**

b) from 10 to 80% by weight of a reinforcing fiber and

c) from 0.00001 to 1.0% by weight of a phosphane, sulfonium salt or a titanyle compound and/or 0.00001 to 0.03% by weight of a phosphonium salt or ammonium salt or their mixtures as a catalyst which catalyzes the formation of covalent bonds between the thermoplastic polymer and the surface of the additive. (emphasis added)

5. The **thermoplastic molding** composition as claimed in claim 1, wherein the catalyst is selected from the group consisting of ethyltriphenylphosphonium bromide, tetraphenylphosphonium bromide, tetrabutylphosphonium bromide, stearyl-tributylphosphonium bromide, triphenylphosphane, and their mixtures. (emphasis added)

Claim 1 of the instant application is as follows:

A **polyacetal molding composition** comprising

a) from 20 to 99% by weight of a **polyacetal homo- or copolymer**,

b) from 0.1 to 80% by weight of an additive, and

c) up to 1.0% by weight of a catalyst which catalyzes a chemical reaction between the polyacetal matrix polymer and the surface of the additive,

where the catalyst does not comprise the element boron and is not a Brönsted acid and wherein the catalyst is selected from the group consisting of ethyltriphenylphosphonium bromide, tetraphenylphosphonium bromide, tetrabutylphosphonium bromide,

stearyltributylphosphonium bromide, triphenylphosphane, n-butyl titanate, and their mixtures and wherein said catalyst is present in an amount from 0.0007 to 0.005% by weight, based on the total weight of the molding composition.

Claim 2 of the instant application is as follows:

A **long-fiber-reinforced polyacetal molding composition** as claimed in claim 1 comprising

- a) from 20 to 90% by weight of a polyoxymethylene homo- or copolymer,
- b) from 10 to 80% by weight of a reinforcing fiber,
- c) from 0.00001 to 0.5% by weight of at least one catalyst which catalyzes a chemical reaction between the polyacetal homo- or copolymer and the surface of the reinforcing fiber and

wherein the catalyst does not comprise the element boron and is not a Brönsted acid and wherein the catalyst is selected from the group consisting of ethyltriphenylphosphonium bromide, tetraphenylphosphonium bromide, tetrabutylphosphonium bromide, stearyltributylphosphonium bromide, triphenylphosphane, n-butyl titanate, and their mixtures

In the instant case, one difference between the claimed invention and the claims of the '887 patent is that the claimed invention is directed to **a polyacetal molding composition** while the claimed invention of the '887 patent are to a **thermoplastic molding composition**².

A second difference is between the two is that component a) in the '887 patent is a **a thermoplastic polymer** while component a in the applicant's claimed invention is a **polyacetal homo- or copolymer**.

The Examiner has relied upon Laughner for these features. The applicant does not believe that Laughner is combinable with the '887 patent. For the above reasons, this rejection should be withdrawn.

² It is noted that the preamble in claims 16-20 inadvertently state "polyacetal molding composition". The applicant filed a request for Certificate of Correction to correct this obvious typographical error.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

A three month extension fee has been paid. Applicant believes no additional fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 05587-00368-US from which the undersigned is authorized to draw.

Dated: February 25, 2008

Respectfully submitted,

Electronic signature: /Ashley I. Pezzner/

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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,169,887 B2
APPLICATION NO. : 10/506541
DATED : January 30, 2007
INVENTOR(S) : Nicolai Papke

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 16, line 63, "polyether, polythioether, polyphenylene oxide, pol-" should read -- polyether, polythioether, polyphenylene oxide, pol- --.

Column 17, line 14, "of ester groups, amid groups, and urethane groups." should read -- of ester groups, amide groups, and urethane groups. --.

Column 17, line 36, "one another at tie surface." should read -- one another at the surface. --.

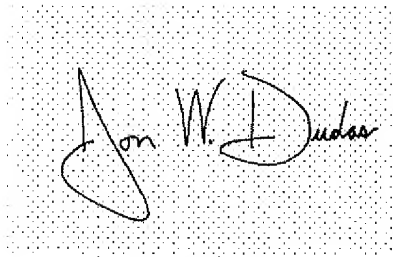
Column 17, line 42, "is 1 or 2" should read -- p is 1 or 2 --.

Column 18, line 20, "where R₁, K₂, R₃, and R₄ are identical or different, and" should read -- where R₁, R₂, R₃, and R₄ are identical or different, and --.

Column 18, line 23, "where R ailcyl or aryl" should read -- where R is alkyl or aryl --.

Signed and Sealed this

Seventeenth Day of April, 2007

A handwritten signature in black ink, reading "Jon W. Dudas", is written over a rectangular area with a light gray dot grid background.

JON W. DUDAS
Director of the United States Patent and Trademark Office

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,169,887 B2
APPLICATION NO. : 10/506541
DATED : January 30, 2007
INVENTOR(S) : Nicolai Papke

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims:

Column 17, on line 39, "The polyacetal molding composition as claimed in"
should read -- The thermoplastic molding composition as claimed in --.

Column 17, on line 48, "The polyacetal molding composition as claimed in"
should read -- The thermoplastic molding composition as claimed in --.

Column 18, on line 7, "The polyacetal molding composition as claimed in"
should read -- The thermoplastic molding composition as claimed in --.

Column 18, on line 24, "The polyacetal molding composition as claimed in"
should read -- The thermoplastic molding composition as claimed in --.

Column 18, on line 29, "The polyacetal molding composition as claimed in"
should read -- The thermoplastic molding composition as claimed in --.

Signed and Sealed this

Twenty-second Day of January, 2008

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, looping initial "J" and a distinct "D".

JON W. DUDAS
Director of the United States Patent and Trademark Office